Part 3
Outdoor Units

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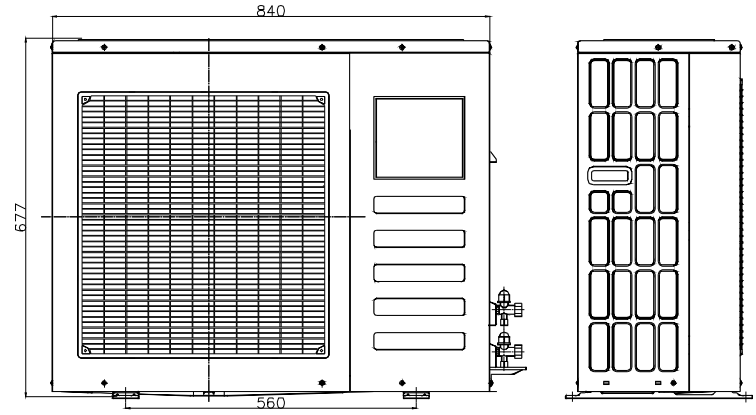
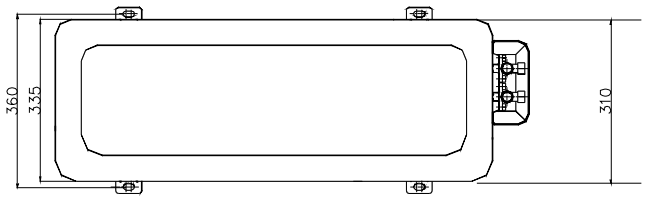
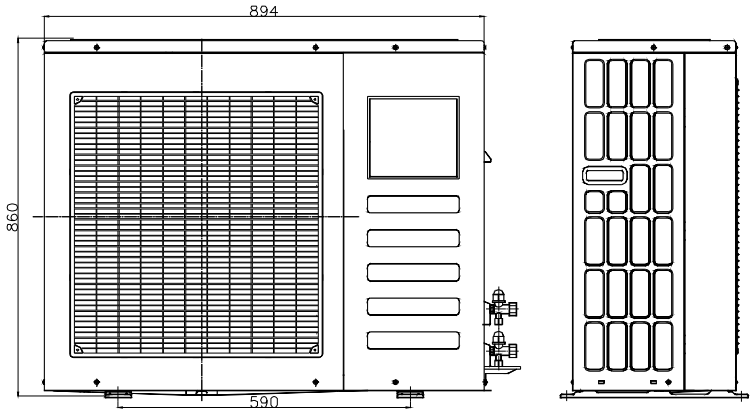
1. Dimensions

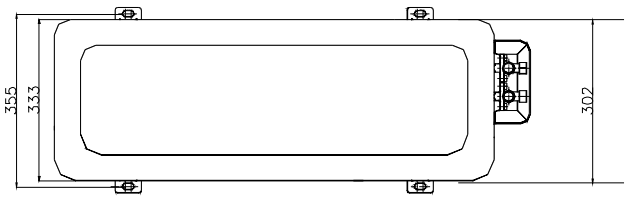
1.1. MOU-18HRDN1



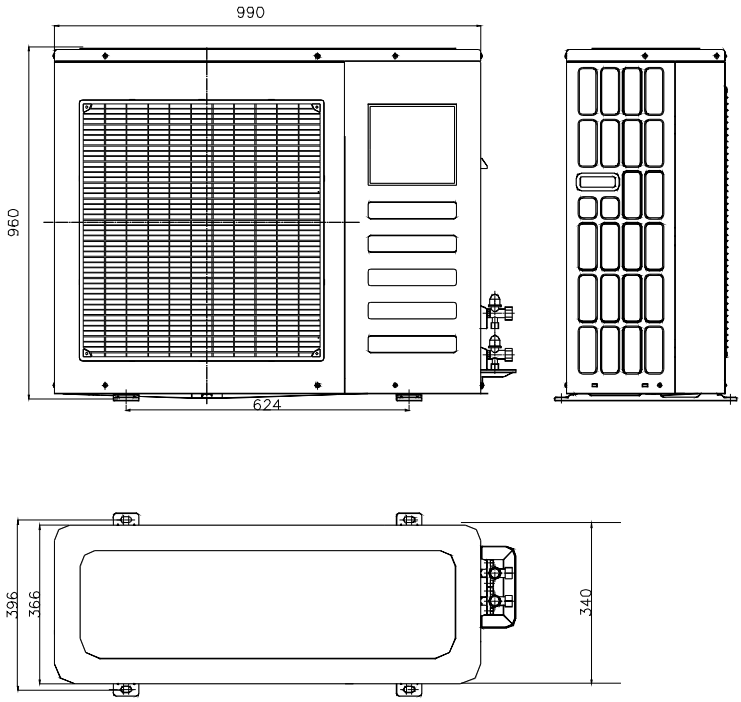


1.2 MOU-24HRDN1

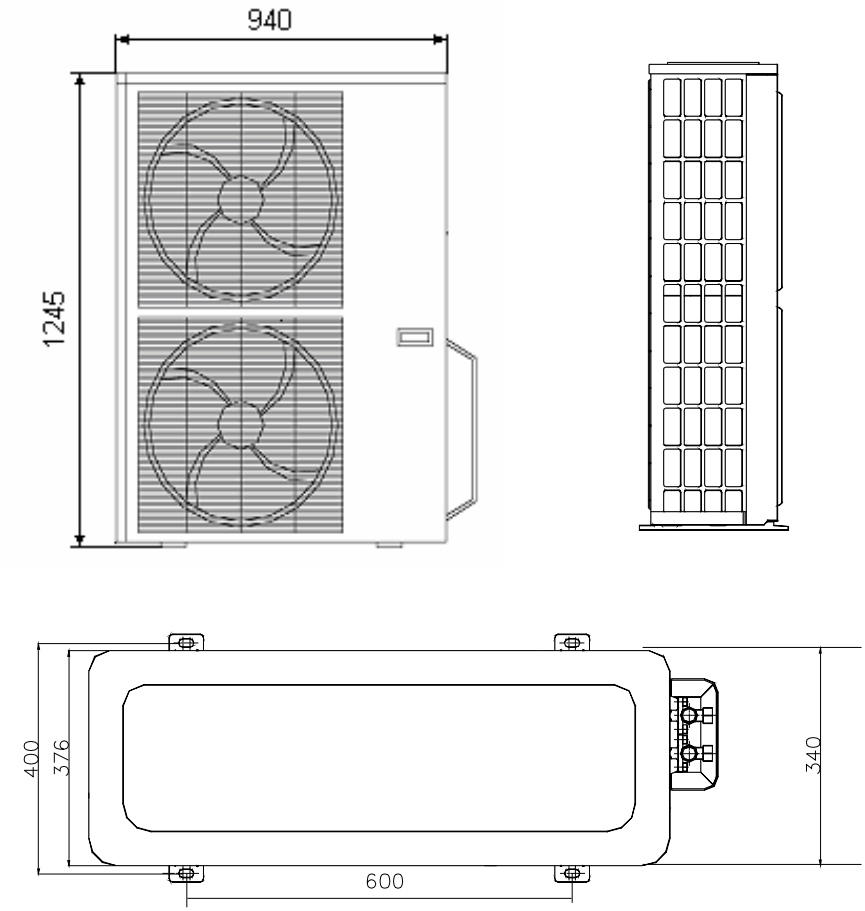




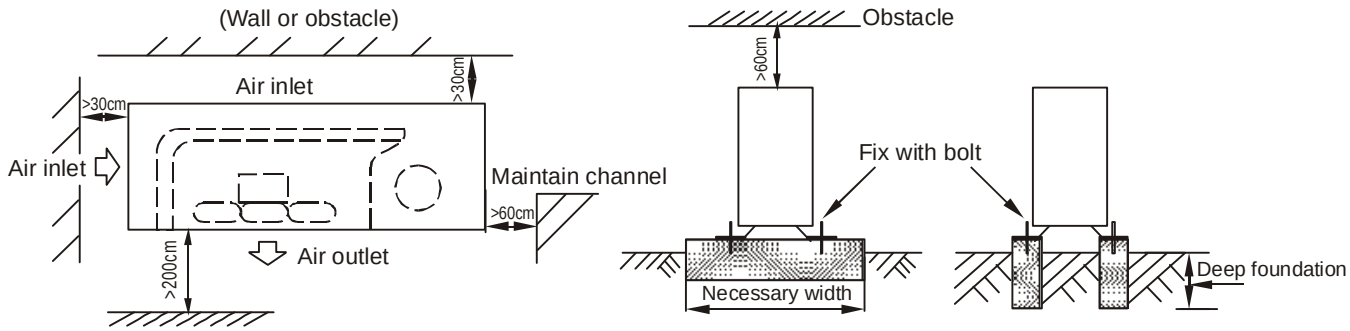
1.3 MOU-36HRDN1



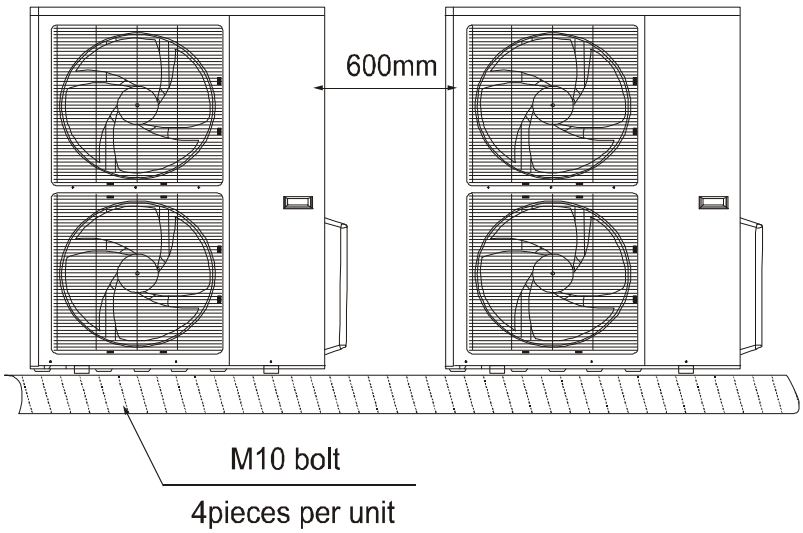
1.4 MOU-48HRDN1 MOU-60HRDN1



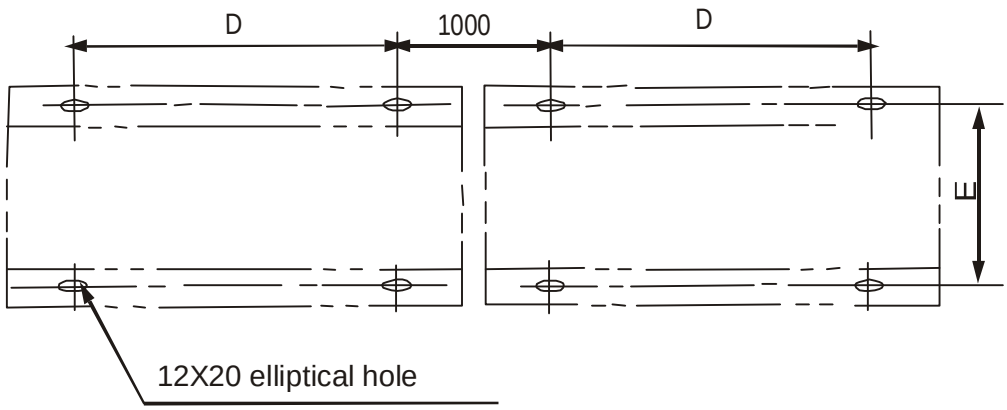
2 Service Space



600mm is necessary between 2 outdoor units

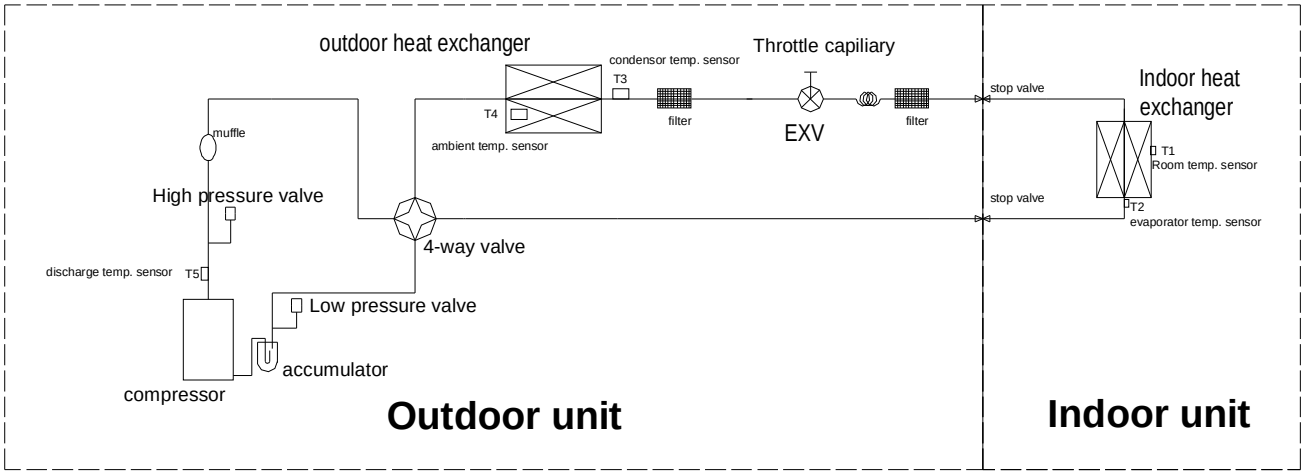


Distance between foot bolts



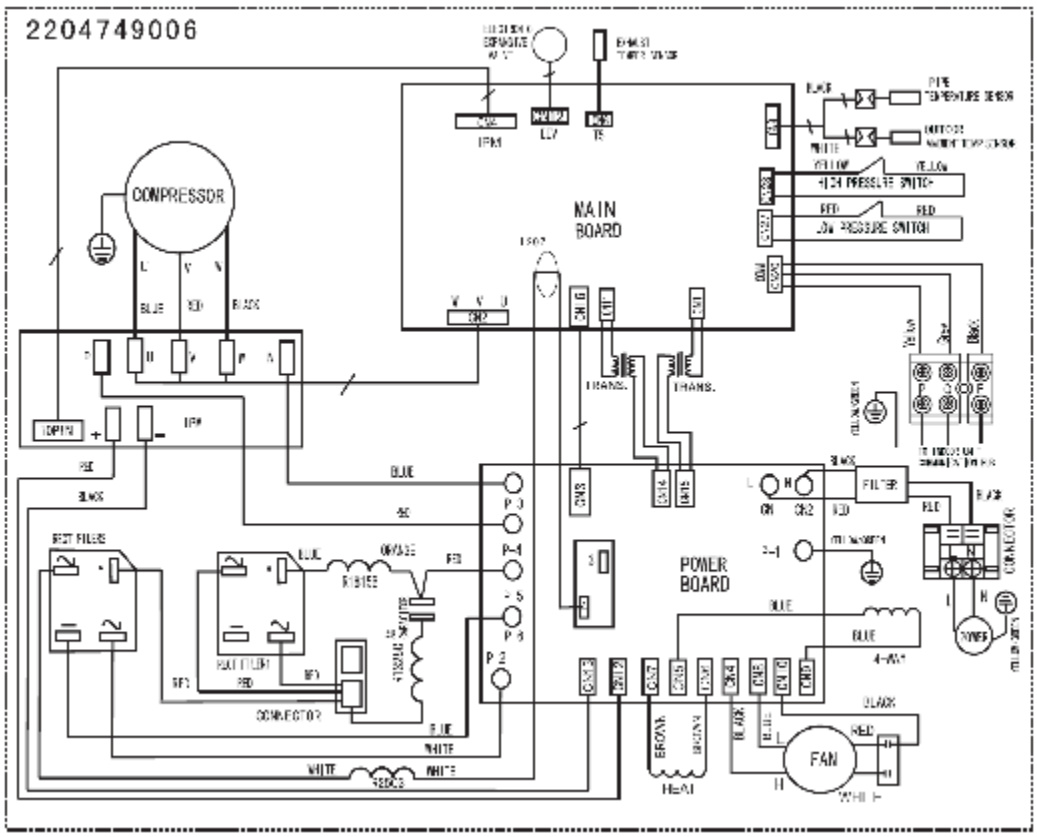
Regarding D, E please refer to outline and dimension of outdoor unit

3. Piping Systems

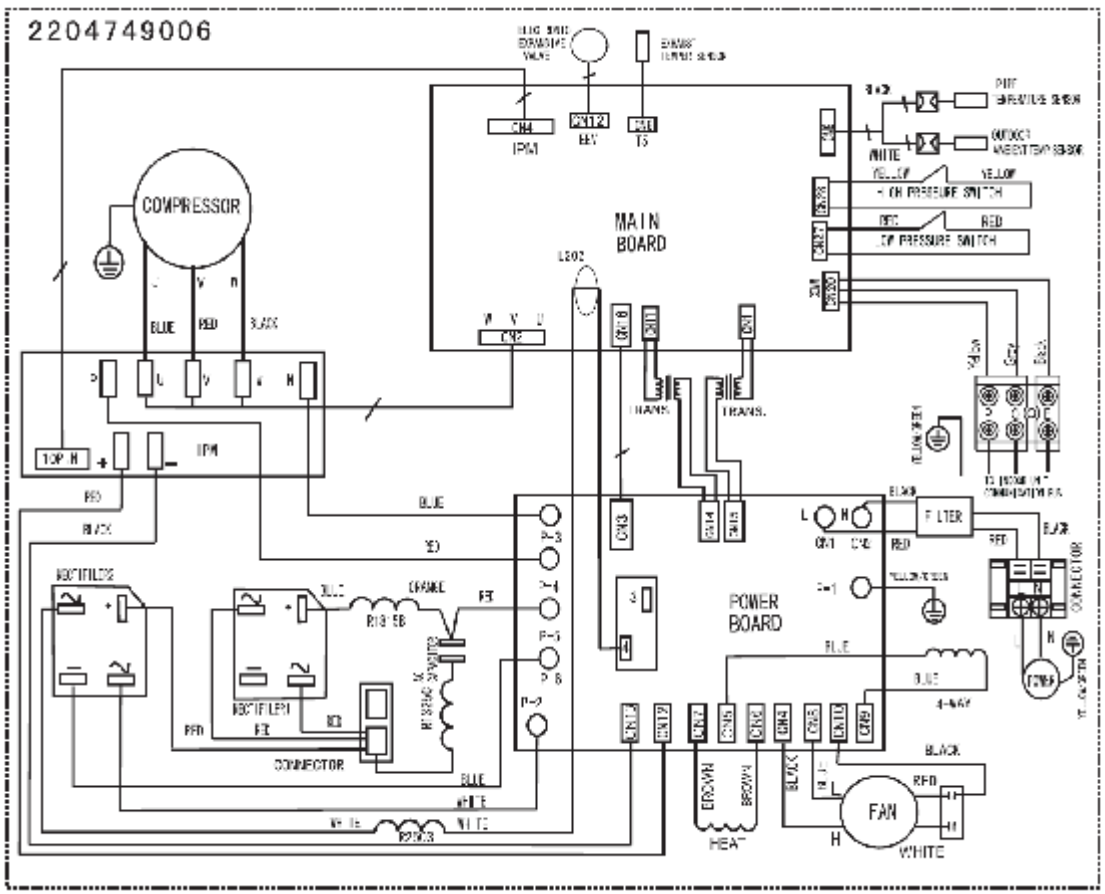


4. Wiring Diagrams

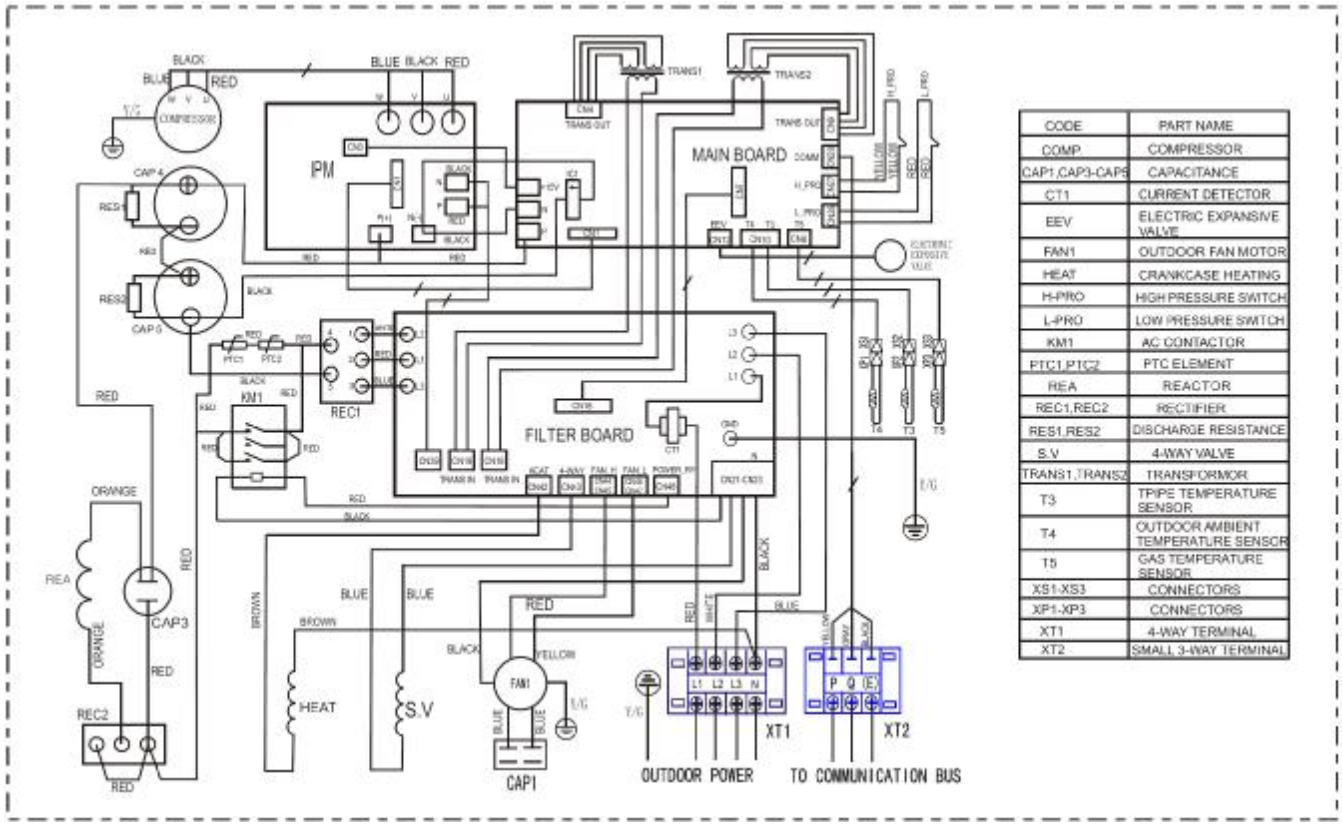
MOU-18HRDN1



MOU-24HRDN1

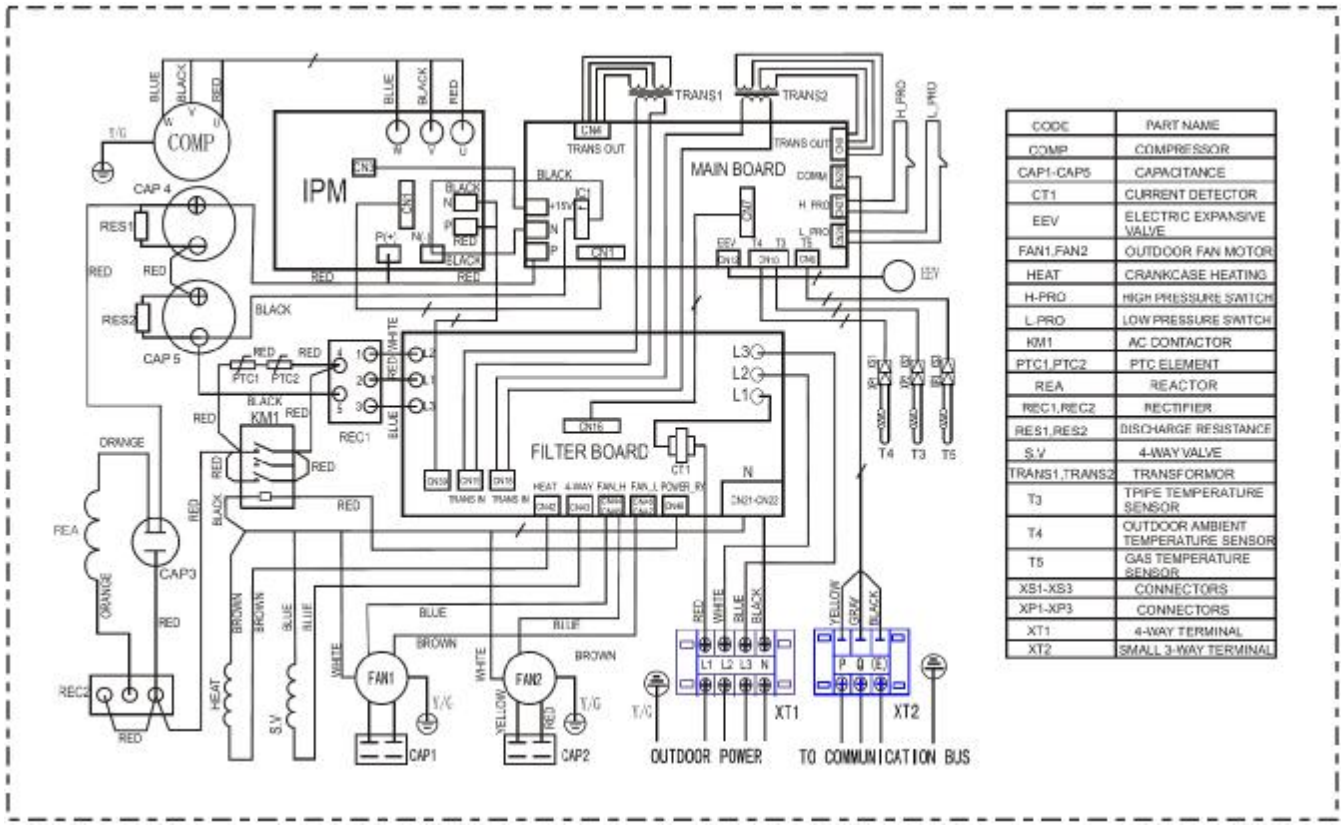


MOU-36HRDN1



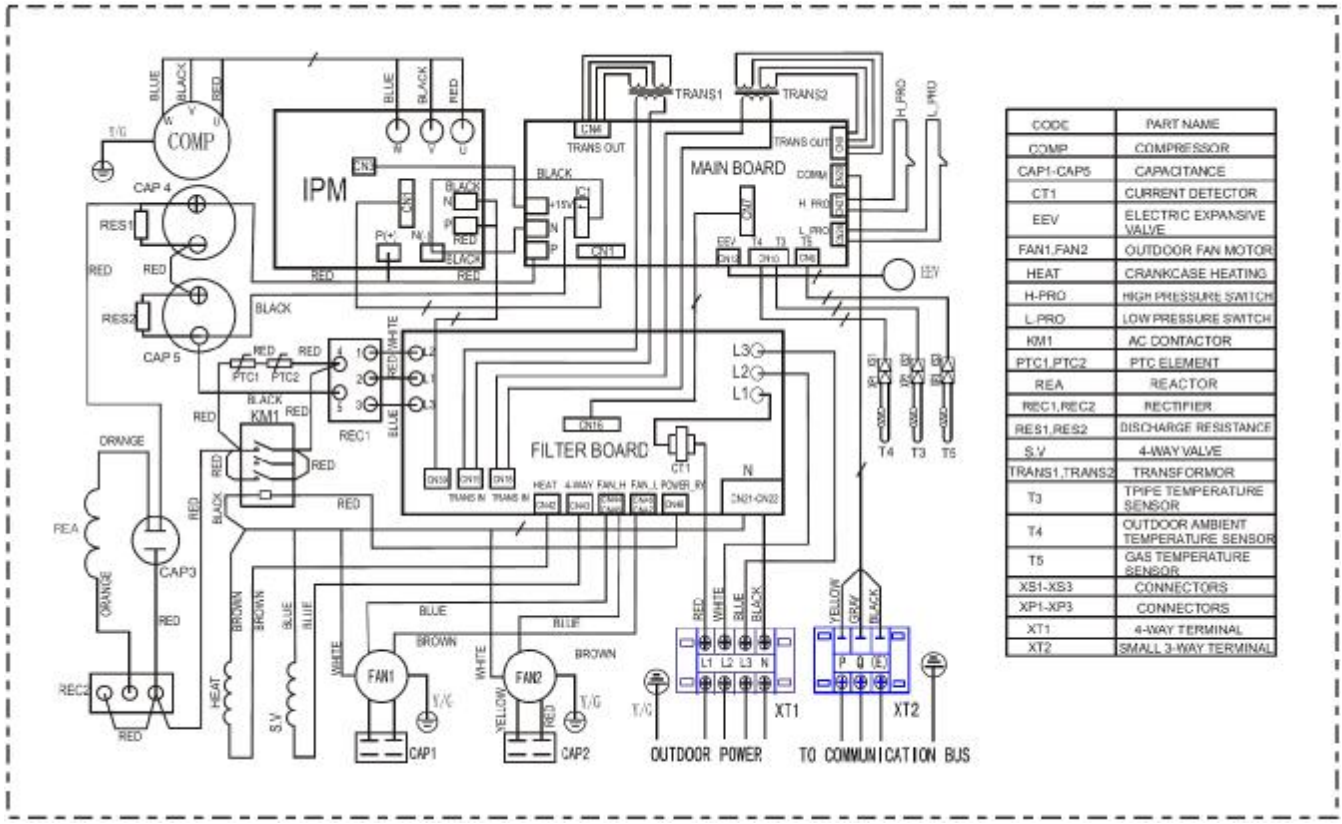
CODE	PART NAME
COMP	COMPRESSOR
CAP1,CAP3-CAP5	CAPACITANCE
CT1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	DISCHARGE RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	TPIPE TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	GAS TEMPERATURE SENSOR
XS1-XS3	CONNECTORS
XP1-XP3	CONNECTORS
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

MOU-48HRDN1



CODE	PART NAME
COMP	COMPRESSOR
CAP1-CAP5	CAPACITANCE
CT1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1,FAN2	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	DISCHARGE RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	TPIPE TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	GAS TEMPERATURE SENSOR
XS1-XS3	CONNECTORS
XP1-XP3	CONNECTORS
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

MOU-60HRDN1

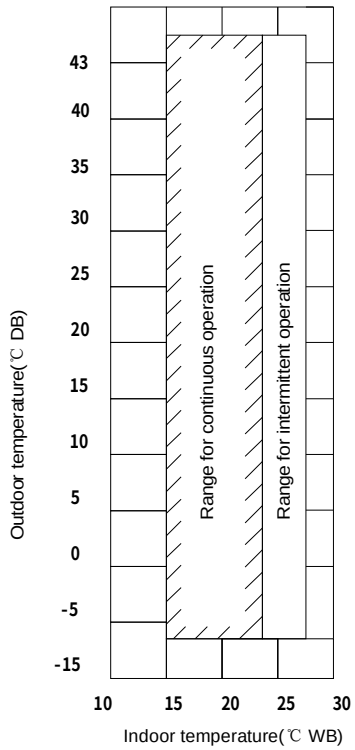


CODE	PART NAME
COMP	COMPRESSOR
CAP1-CAP5	CAPACITANCE
CT1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1,FAN2	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	DISCHARGE RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	TPIPE TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	GAS TEMPERATURE SENSOR
XS1-XS3	CONNECTORS
XP1-XP3	CONNECTORS
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

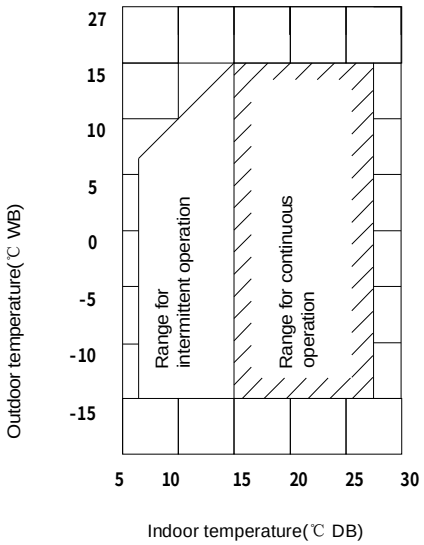
5. Operation Limits

Heat pump

Cooling



Heating



Note: These figure assume the following operating condition:
Equivalent Pipe length: 7.5m,
Height difference: 0m.

6. Electric Characteristics

Model	Units				Power Supply		Compressor		Outdoor fan motor	
	Hz	Voltage	Min.	Max.	MCA	MFA	MSC	RLA	Power output	FLA
MOU-18HRDN1	50	220~240V	198	255	0A	20A	28A	8A	0.129KW	0.59A
MOU-24HRDN1	50	220~240V	198	255	0A	20A	28A	8A	0.15 KW	0.72A
MOU-36HRDN1	50	380V	342	418	6A	15A	28A	7.8A	0.307KW	1.4A
MOU-48HRDN1	50	380V	342	418	6A	15A	28A	7.8A	0.15KW	0.82A
MOU-60HRDN1	50	380V	342	418	6A	15A	28A	7.8A	0.15KW	0.82A

Symbols:

MCA: Min. Circuit Amps.

TOCA: Total Over –Current Amps.

MFA: Max. Fuse Amps..

MSC: Max. Starting Current

RLA: Rated Locked Current

FLA: Full Load Amps.

Kw: Rate Motor Output

Notes:

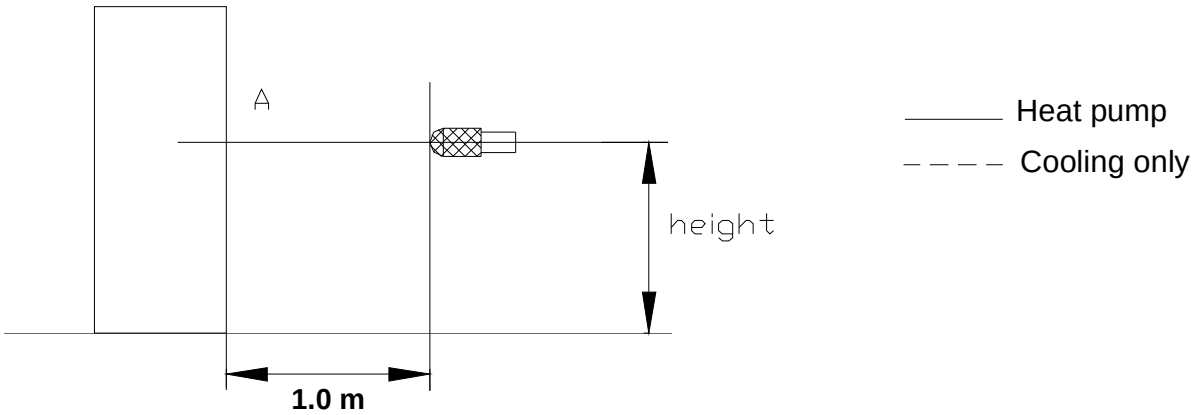
1. RLA is based on the following conditions,
   Indoor temp. 27℃ DB/19℃ WB
   Outdoor temp. 35℃ DB
2. TOCA means the total value of each OC set.
3. MSC means the Max. current during the starting of compressor.
4. Voltage range
5. Maximum allowable voltage variation between phase is 2%
6. Selection wire size based on the larger value of MCA or TOCA
7. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

7. Sound Levels

Over all:

Model	Noise level dB(A)
MOU-18HRDN1	48
MOU-24HRDN1	52
MOU-36HRDN1	54
MOU-48HRDN1	58
MOU-60HRDN1	60

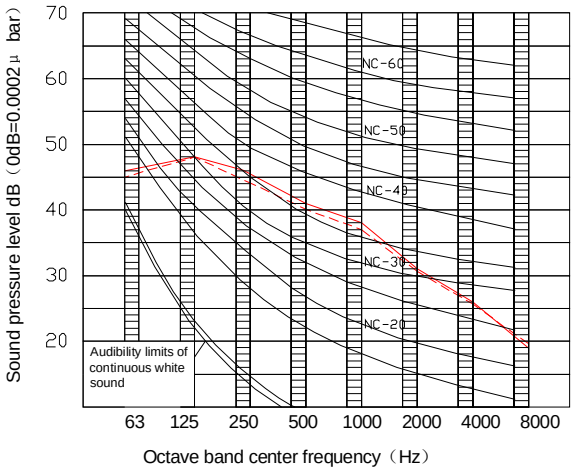
Outdoor unit **Microphone**



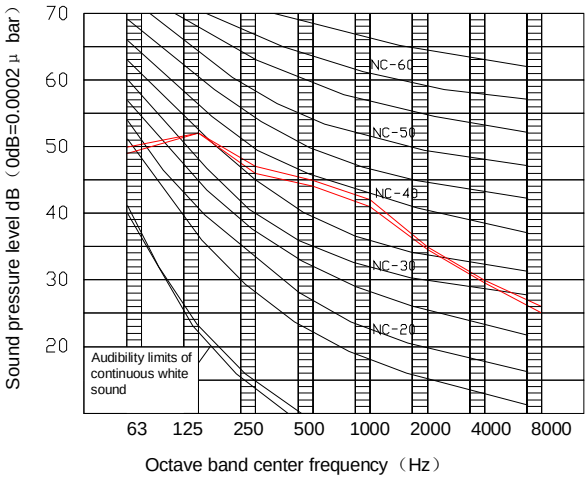
The point A is in the middle of the whole outdoor panel.

Octave Band Level

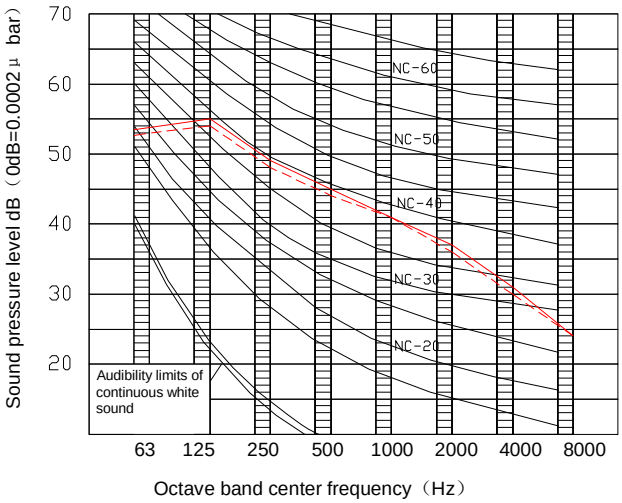
18,000 BTU/H



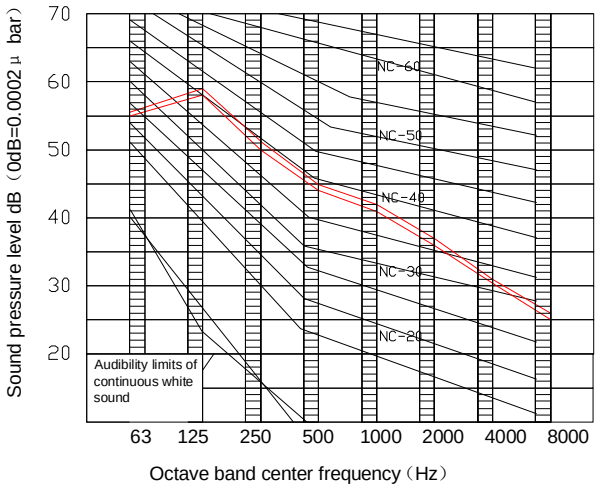
24,000BTU/H



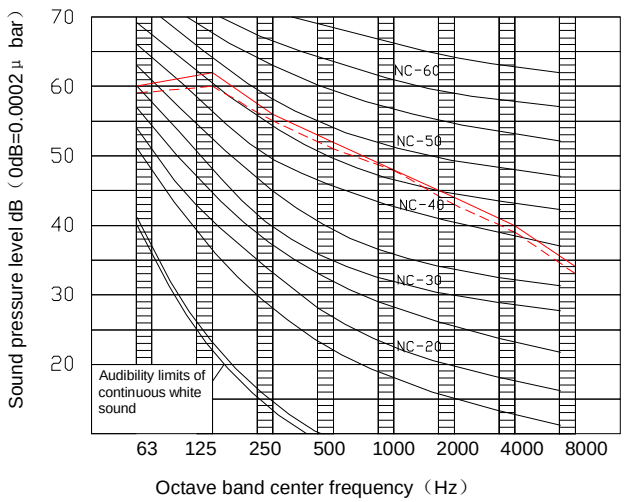
36,000BTU/H (3 phase)



48,000BTU/H (3 phase)

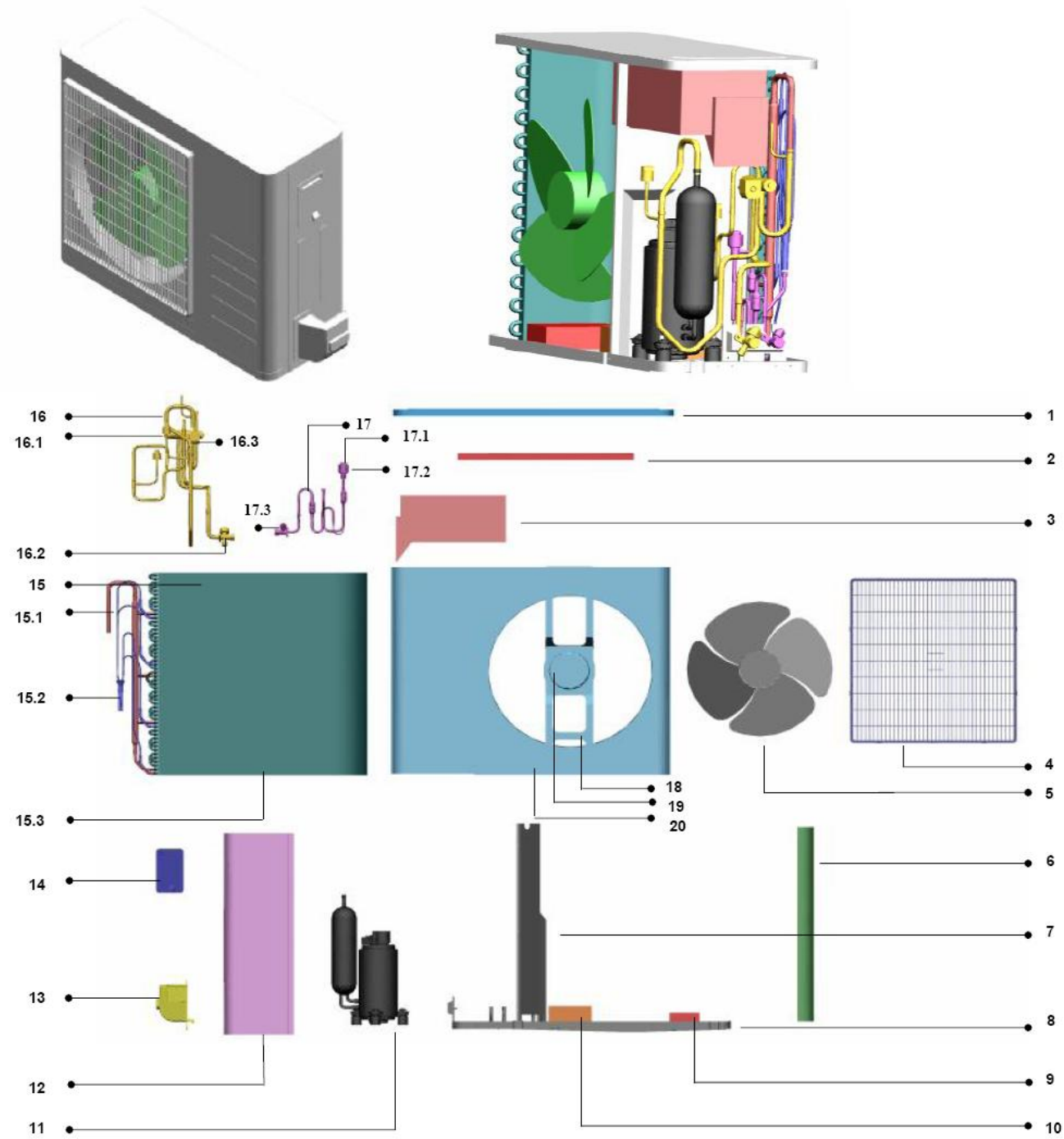


60,000BTU/H



8. Exploded Views

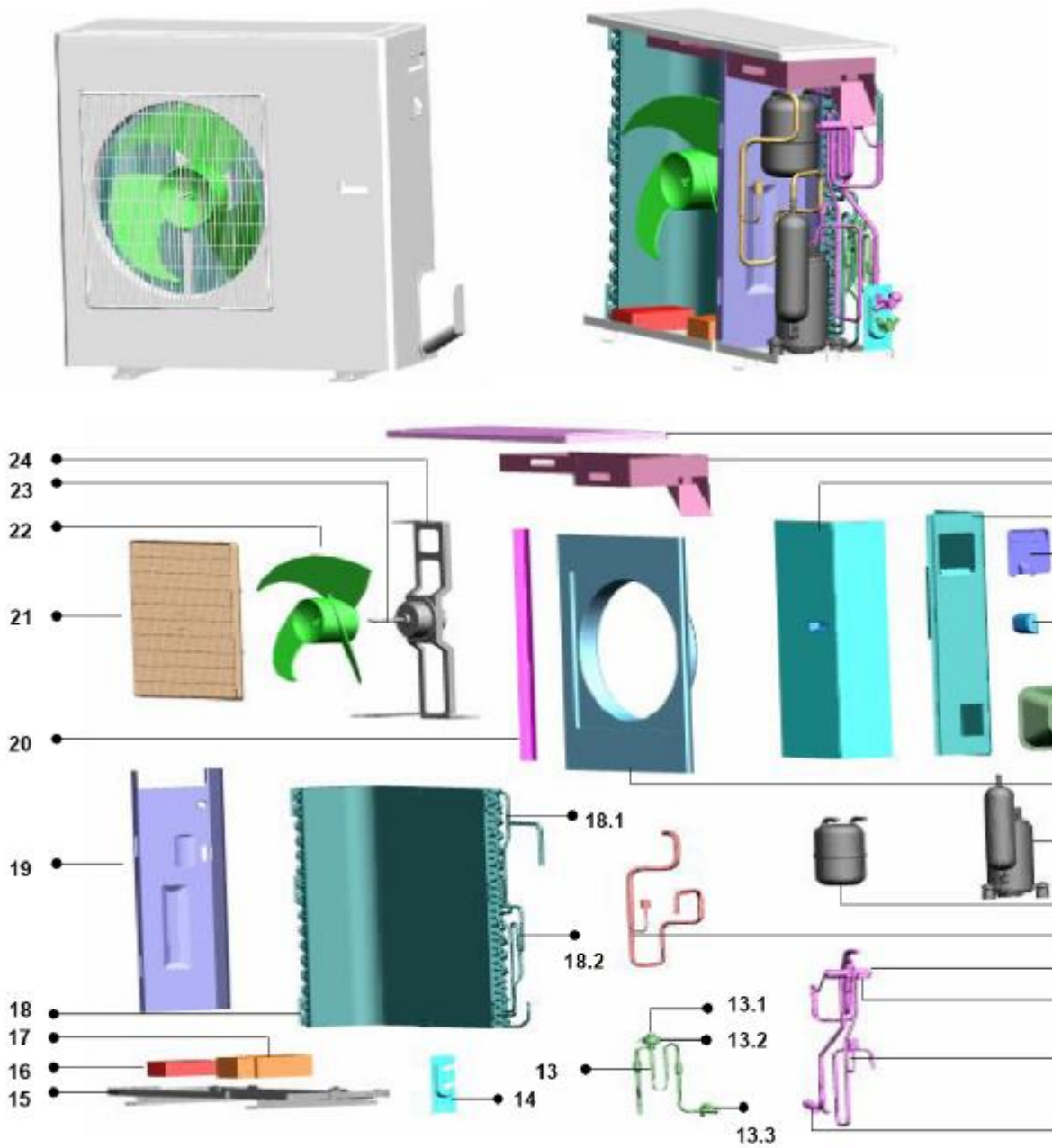
MOU-18HRDN1



No.	Part Name	Quantity		No.	Part Name	Quantity
1	Cover Ass'y	1		15.1	Inlet pipe Ass'y	1
2	rear net frame	1		15.2	Outlet pipe Ass'y	1
3	E-Parts Box Ass'y	1		15.3	Condenser	1
4	Front net Ass'y	1		16	Fourway valve Ass'y	1
5	Propeller Fan Ass'y	1		16.1	Fourway valve	1
6	Left clapboard Ass'y	1		16.2	Low pressure valve	1
7	Separate board	1		16.3	Fourway valve coil	1

8	Chassis Ass'y	1		17	High pressure valve Ass'y	1
9	inductance up cover	1		17.1	Electrical expansion Valve	1
10	inductance box	1		17.2	Expansion valve coil	1
11	DC inverter compressor	1		17.3	High pressure valve	1
12	Rear Right clapboard Ass'y	1		18	Holder for fan motor	1
13	Valve protection cover	1		19	Fan Motor	1
14	Big handle	1		20	Front board	1
15	Condenser Ass'y	1				

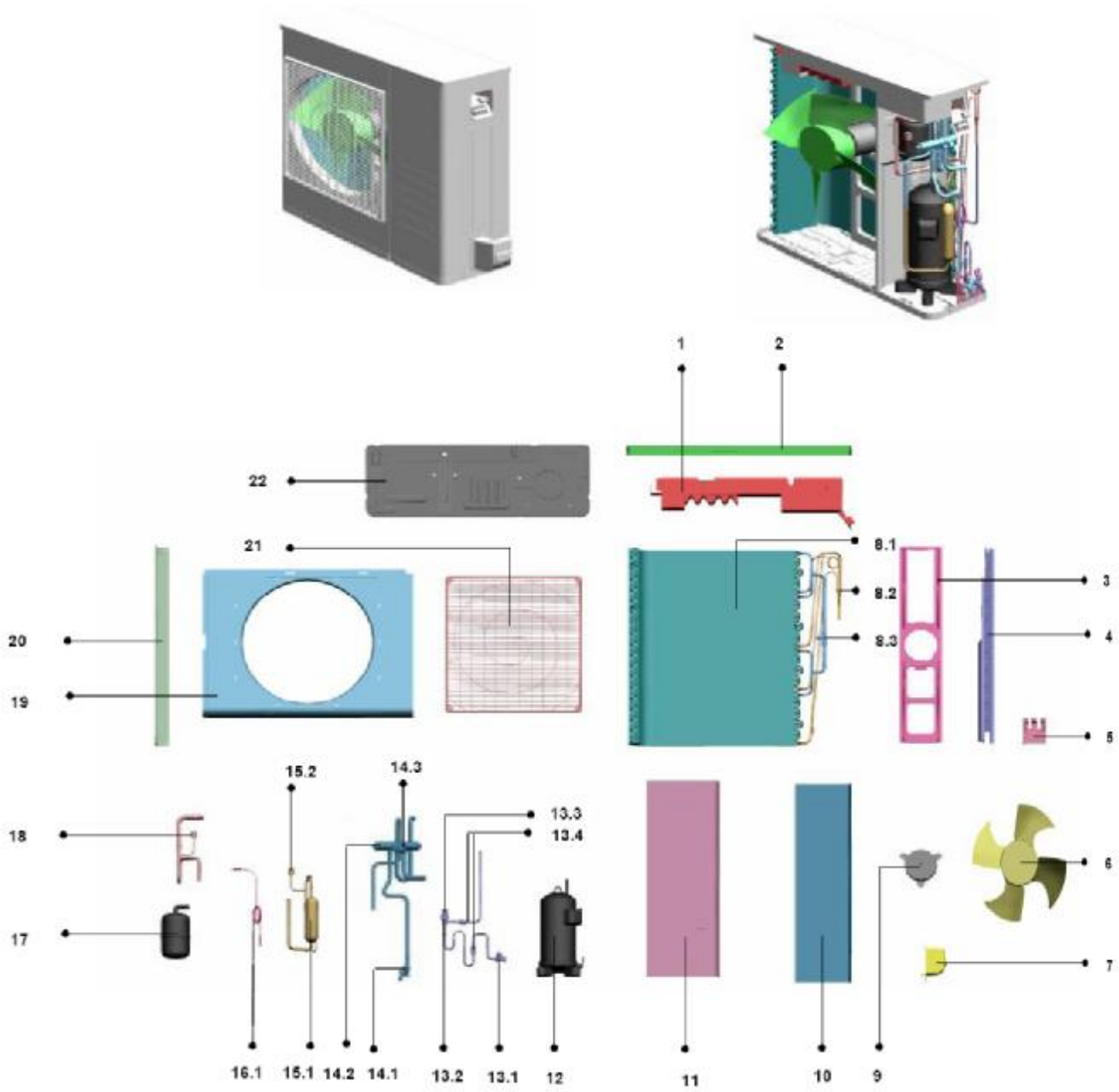
MOU-24HRDN1



No.	Part Name	Quantity		No.	Part Name	Quantity
1	Cover Ass'y	1		13.1	Electrical expansion Valve	1
2	E-Parts box	1		13.2	Expansion valve coil	1

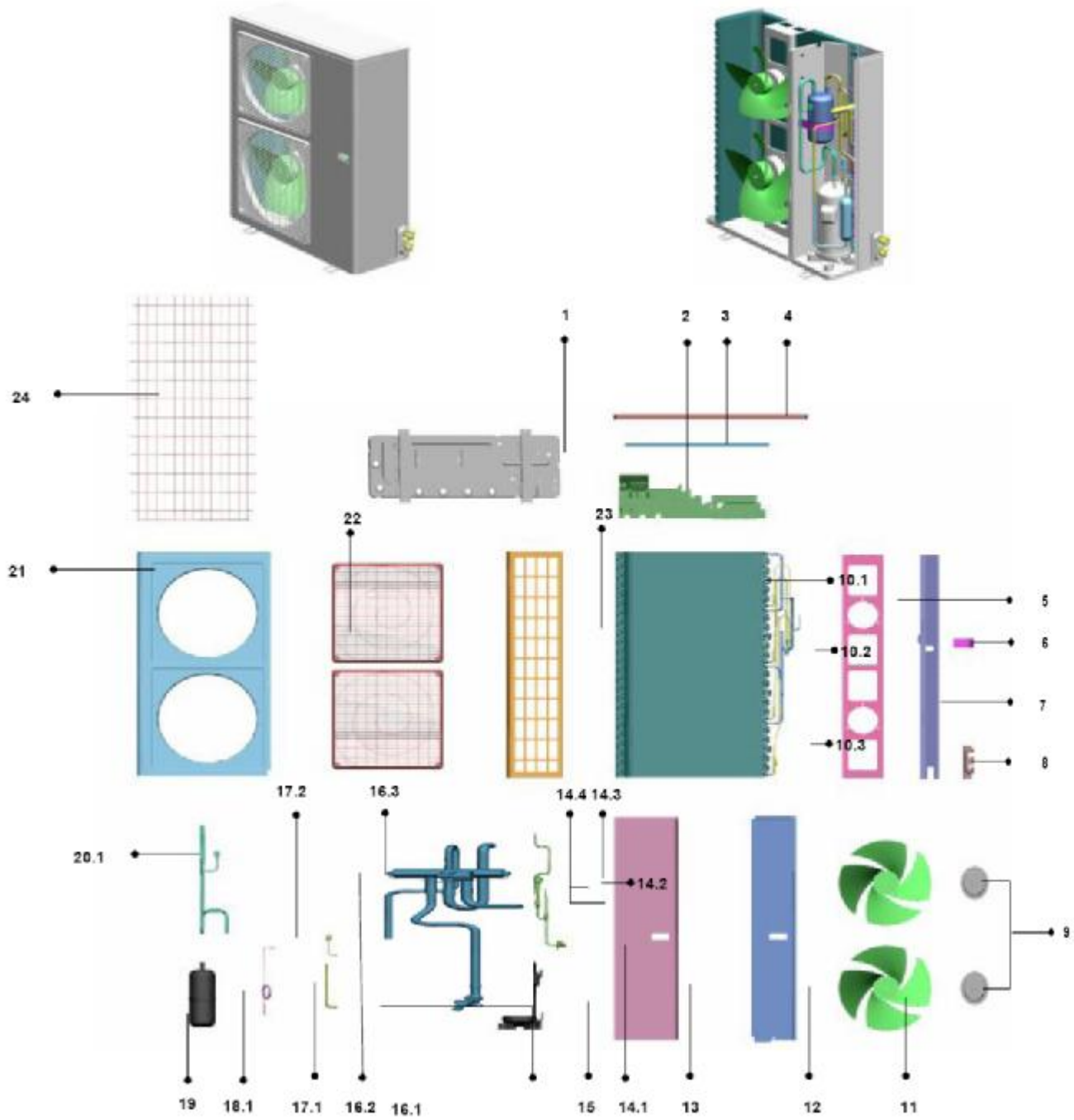
3	Rear Right clapboard Ass'y	1		13.3	High pressure valve	1
4	Back Right clapboard Ass'y	1		14	Valve installation board	1
5	Big handle	1		15	Chassis Ass'y	1
6	Handle	2		16	inductance up cover	1
7	Water collector	1		17	Cover for reactance filter	1
8	Front board	1		18	Condenser Ass'y	1
9	DC inverter compressor	1		18.1	Inlet pipe Ass'y	1
10	Liquid tank	1		18.2	Condenser connection pipe Ass'y	1
11	Suction pipe Ass'y	1		19	Separate board	1
12	Fourway valve Ass'y	1		20	Left clapboard Ass'y	1
12.1	Fourway valve	1		21	Front net Ass'y	1
12.2	Fourway valve coil	1		22	Propeller Fan Ass'y	1
12.3	Low pressure valve	1		23	Fan Motor	**1**
13	High pressure valve Ass'y	1		24	Holder for fan motor	**1**

MOU-36HRDN1



No.	Part Name	Quantity		No.	Part Name	Quantity
1	Cover Ass'y	1		13.1	High pressure valve Ass'y	1
2	E-Parts	1		13.2	Electromagnetic coil	1
2.1	E-Parts Box Ass'y	1		13.3	Electron Throttle Valve	1
2.2	Contactor	1		13.4	Filter	2
2.3	Compressor Capacitor	1		14	Fourway valve Ass'y	1
2.4	75A inverter module Ass'y	2		14.1	Low pressure valve	1
2.5	PCB Ass'y	1		14.2	Fourway valve	1
3	Holder for fan motor	1		14.3	Fourway valve coil	1
4	Separating board Ass'y	1		15	Discharger pipe Ass'y	1
5	Installation plate for valves	1		16	Oil back capillary	1
6	Propeller Fan Ass'y	1		17	Liquid tank	1
7	Valev protect cover	1		18	Suction pipe Ass'y	1
8	Condenser Ass'y	1		18.1	Pressure controller	1
8.1	Condenser	1		19	Front board Ass'y	1
8.2	Outlet pipe Ass'y	1		20	Left clapboard Ass'y	**1**
8.3	Inlet pipe Ass'y	1		21	Front net Ass'y	**1**
9	Fan Motor	1		22	Chassis Ass'y	1
10	Back Right clapboard Ass'y	1		23	Condenser temp sensor	1
11	Rear Right clapboard Ass'y	1		24	Outdoor Temp sensor	**1**
12	DC inverter compressor	1		25	Discharge temp sensor	**1**
13	High pressure valve	1				

MOU-48HRDN1 MOU-60HRDN1

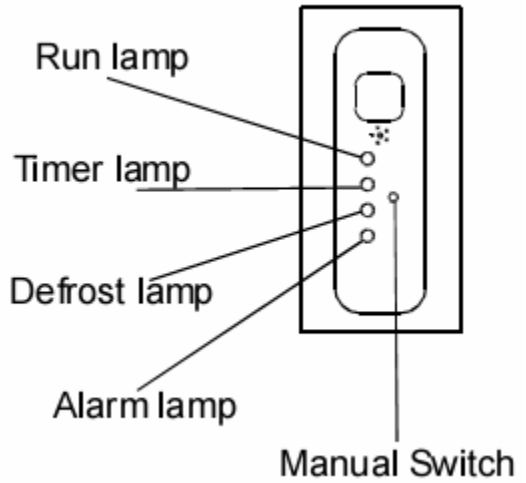


No.	Part Name	Quantity		No.	Part Name	Quantity
1	Chassis	1		14.1	High Pressure Valve	1
2	E-parts, assy	1		14.2	Electric expansive valve	1
2.1	Main control board	1		14.3	Electric Expansion loop	1
2.2	Contactor	1		14.4	Filter	2
2.3	Compressor capacitor	1		15	Compressor	1
2.4	Inverter control board	1		16	4-way valve subassembly	1
3	Rear net clip	1		16.1	gas valve subassembly	1
4	Cover	1		16.2	Four-way Valve	1
5	Fan Motor Holder	1		16.3	Four-way Valve Solenoid	1
6	Fixture,Segregator	1		17	Liquid pipe valve	1
7	Separating board Ass'y	1		18	Capillary Tube	1

8	Installation plate for valves	1		19	Fluid tank	1
9	Fan motor	2		20	Gas pipe valve	1
10	Condenser Ass'y	1		20.1	Pressure controller	1
10.1	Condenser	1		21	Cabinet,Front	1
10.2	Outlet pipe, eva	1		22	Guard fan	2
10.3	Input pipes of Evaporator Ass'y	1		23	left holder	1
11	Propeller fan	2		24	Rear net	1
12	Cabinet,Back side	1		24	Condenser temp sensor	1
13	Cabinet,Front Side	1		25	Discharge temp sensor	1
14	High Pressure Valve Ass'y	1				

8. Troubleshooting

8.1 Indoor unit's malfunction indication

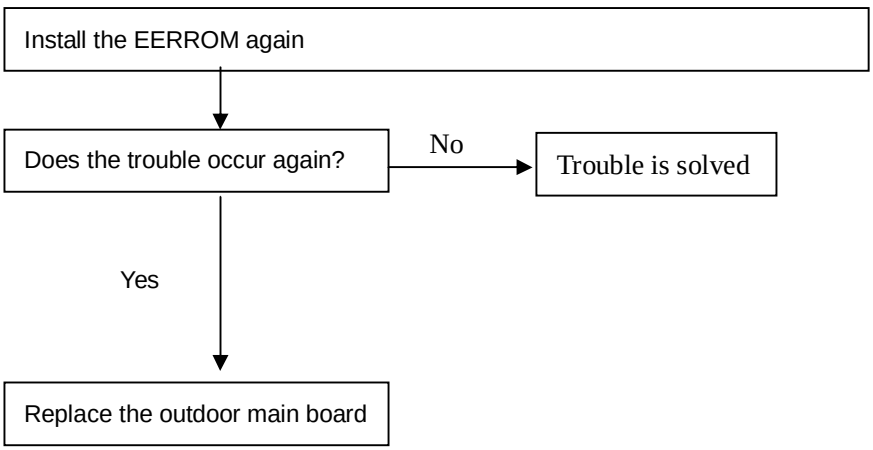


No.	Type	Contents	LED Lamp flash	Remarks
1	**malfunction**	The evaporator sensor check point is abnomal, or room temp. sensor is abnormal.	Run lamp flashes at2.5Hz.	After the malfunctions disappear, it resume automatically.
2	**malfunction**	Indoor/outdoor unit com-unication is abnormal	The timer lamp flashes at2.5Hz.	After the malfunctions disappear, it resume automatically.
3	**malfunction**	Condenser sensor check point is abnormal or outdoor temp. sensor is abnormal.	All the indoor alarm lamps flash at 0.5Hz.	After the malfunctions disappear, it resume automatically.
4	**malfunction**	Water level switch is abnormal	Alarm lamp flashes at 2.5Hz.	If the malfunctions can't be solved in three min. all the indoor alarm lamps flash at 0.5Hz. Turn off the power to restore.

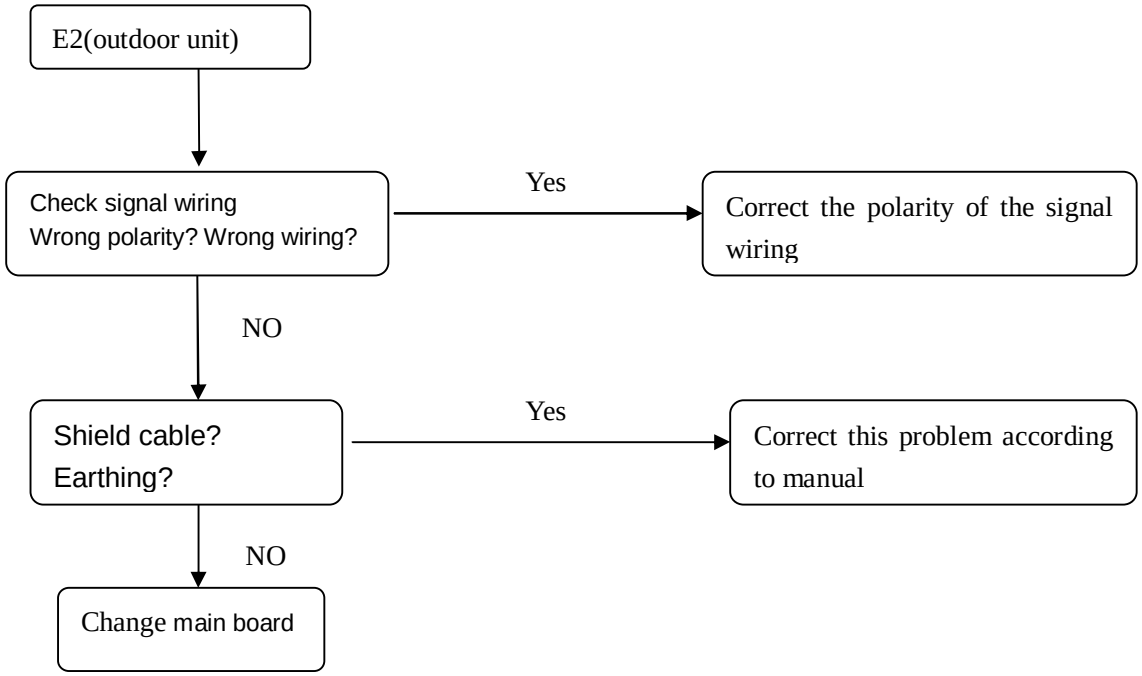
8.2 Outdoor unit's LED indication

Diaplay	Content of malfunction or protection
E0	EEPROM Malfunction
E2	Communication malfunction between outdoor IC and indoor IC.
E3	Communication malfunction between outdoor IC and DSP
E4	Malfunction of out ambient temp. sensor
E5	Voltage protection of compressor
P1	High pressure protection
P2	Low pressure protection
P3	Current protection of compressor
P4	Compressor discharge temperature protection
P5	High temp. protection of ourdoor condenser
P6	Module protection or top temp. protection

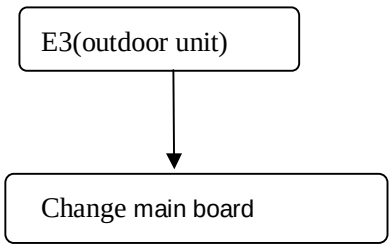
Display	Malfunction or Protection
E0	EEPROM Malfunction



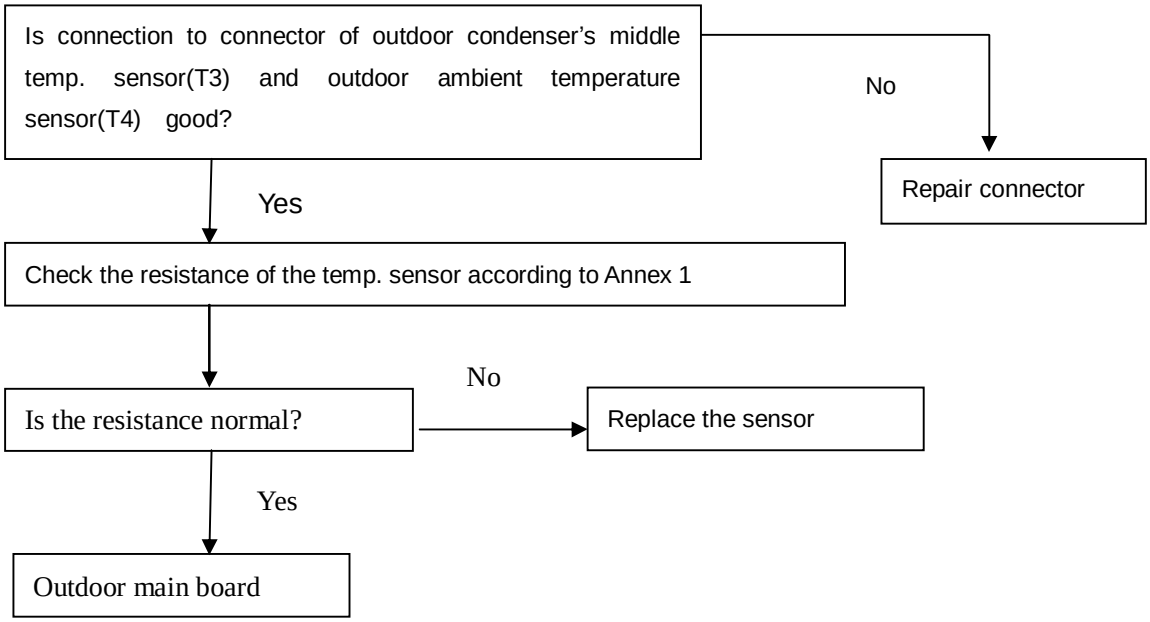
Display	Malfunction or Protection
E2	Communication malfunction between indoor/outdoor units



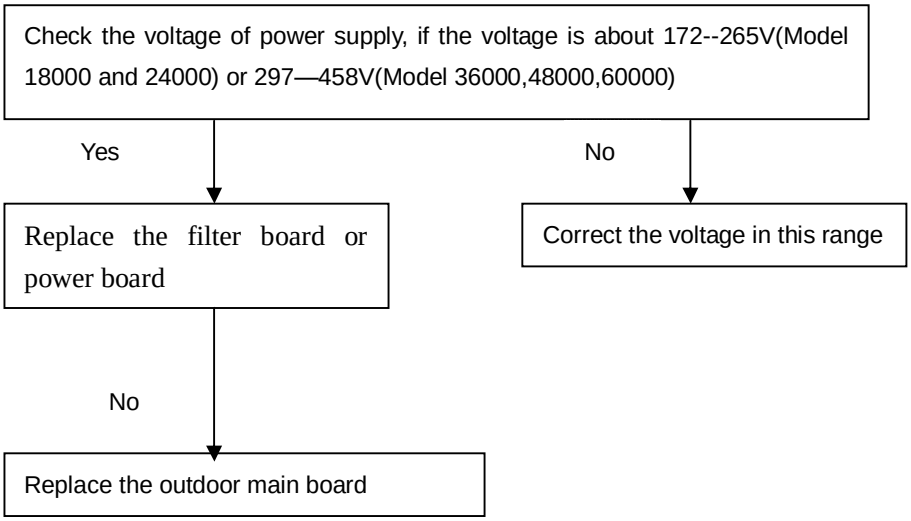
Display	**Malfunction or Protection**
E3	**Communication malfunction between DSP/outdoor units**



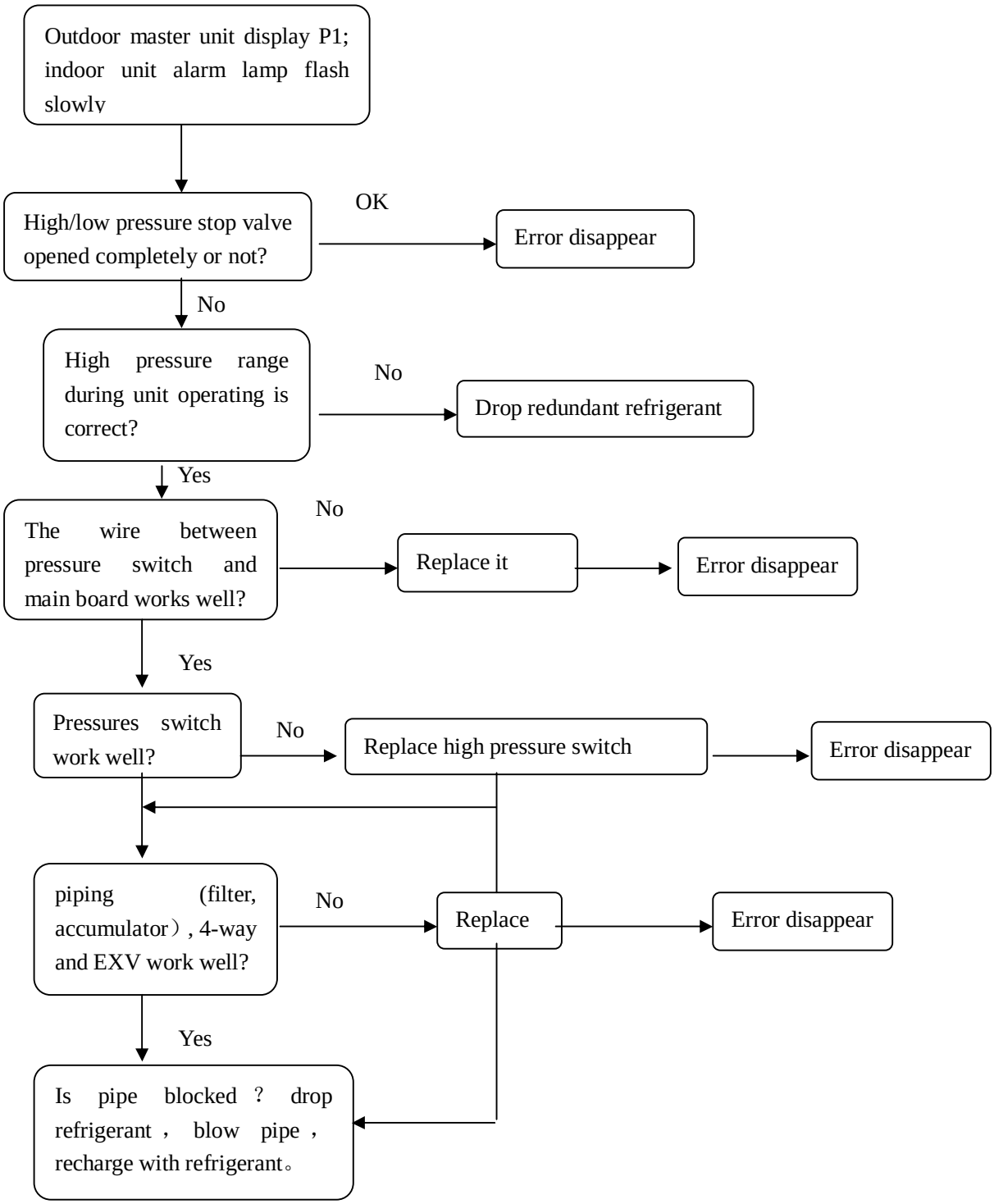
Display	**Malfunction or Protection**
E4	**T4&T3 temperature sensor malfunction**


Is connection to connector of outdoor condenser's middle temp. sensor(T3) and outdoor ambient temperature sensor(T4) good?
No
Repair connector
Yes
Check the resistance of the temp. sensor according to Annex 1
Is the resistance normal?
No
Replace the sensor
Yes
Outdoor main board

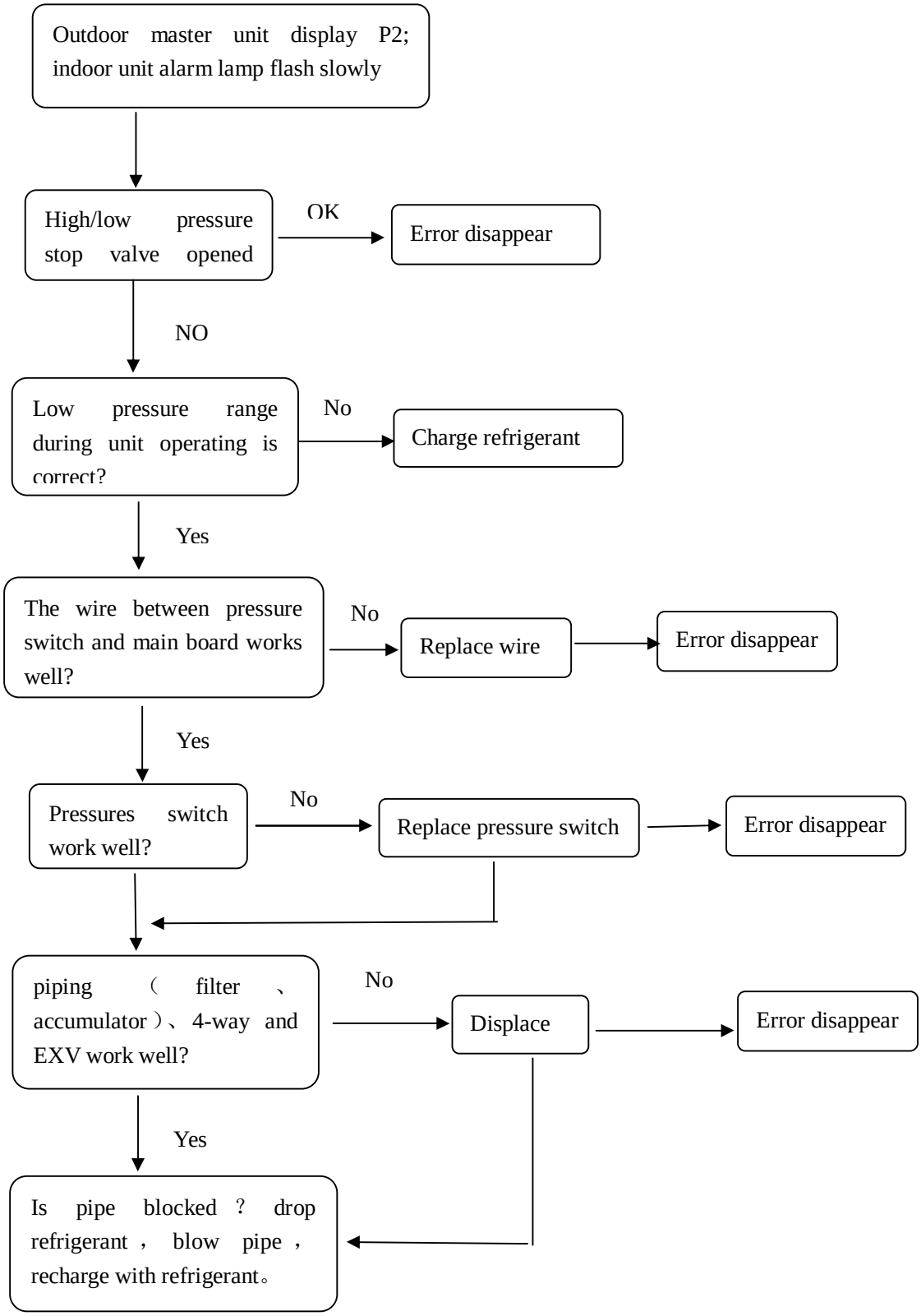
Display	**Malfunction or Protection**
E5	**Compressor Voltage protection**


Check the voltage of power supply, if the voltage is about 172--265V(Model 18000 and 24000) or 297—458V(Model 36000,48000,60000)
Yes
No
Replace the filter board or power board
Correct the voltage in this range
No
Replace the outdoor main board

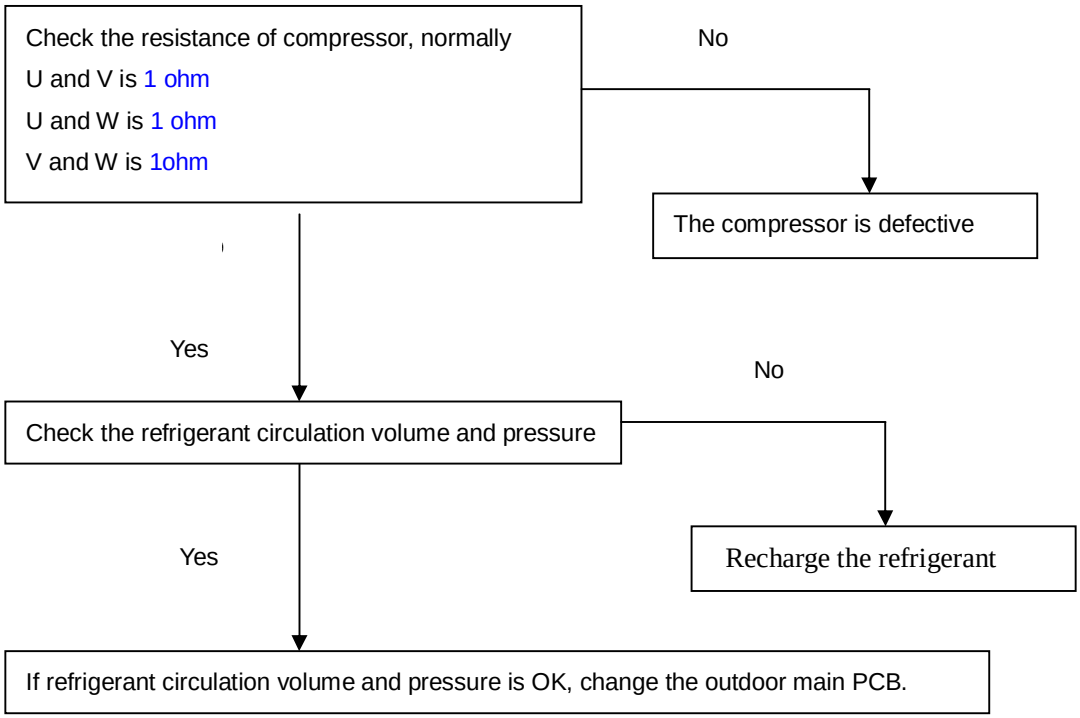
Display	**Malfunction or Protection**
P1	**High pressure protection**



Display	**Malfunction or Protection**
P2	**Low pressure protection**

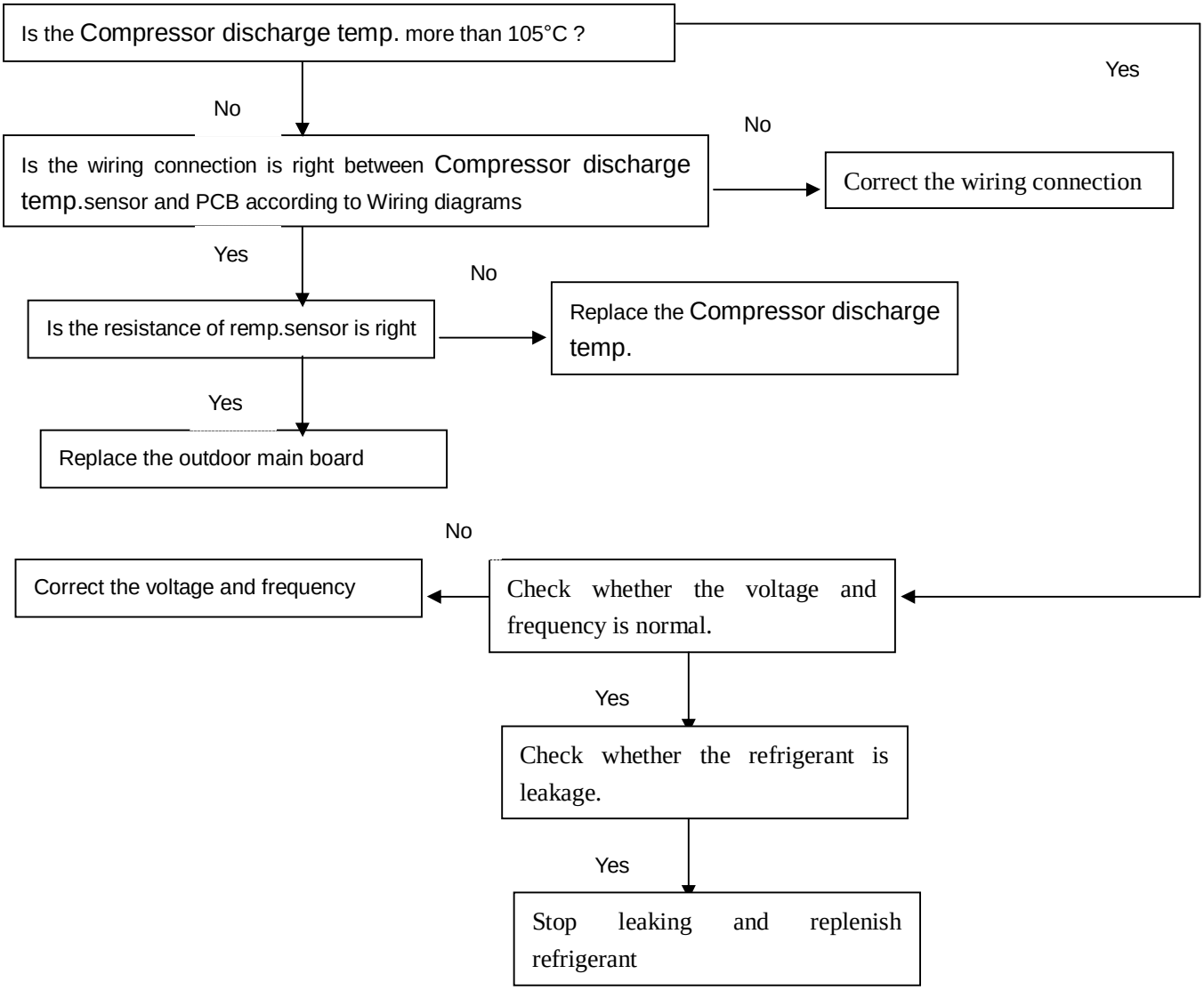


Display	**Malfunction or Protection**
P3	**Compressor current protection**


Check the resistance of compressor, normally
U and V is 1 ohm
U and W is 1 ohm
V and W is 1ohm
No
The compressor is defective
Yes
No
Check the refrigerant circulation volume and pressure
Yes
Recharge the refrigerant
If refrigerant circulation volume and pressure is OK, change the outdoor main PCB.

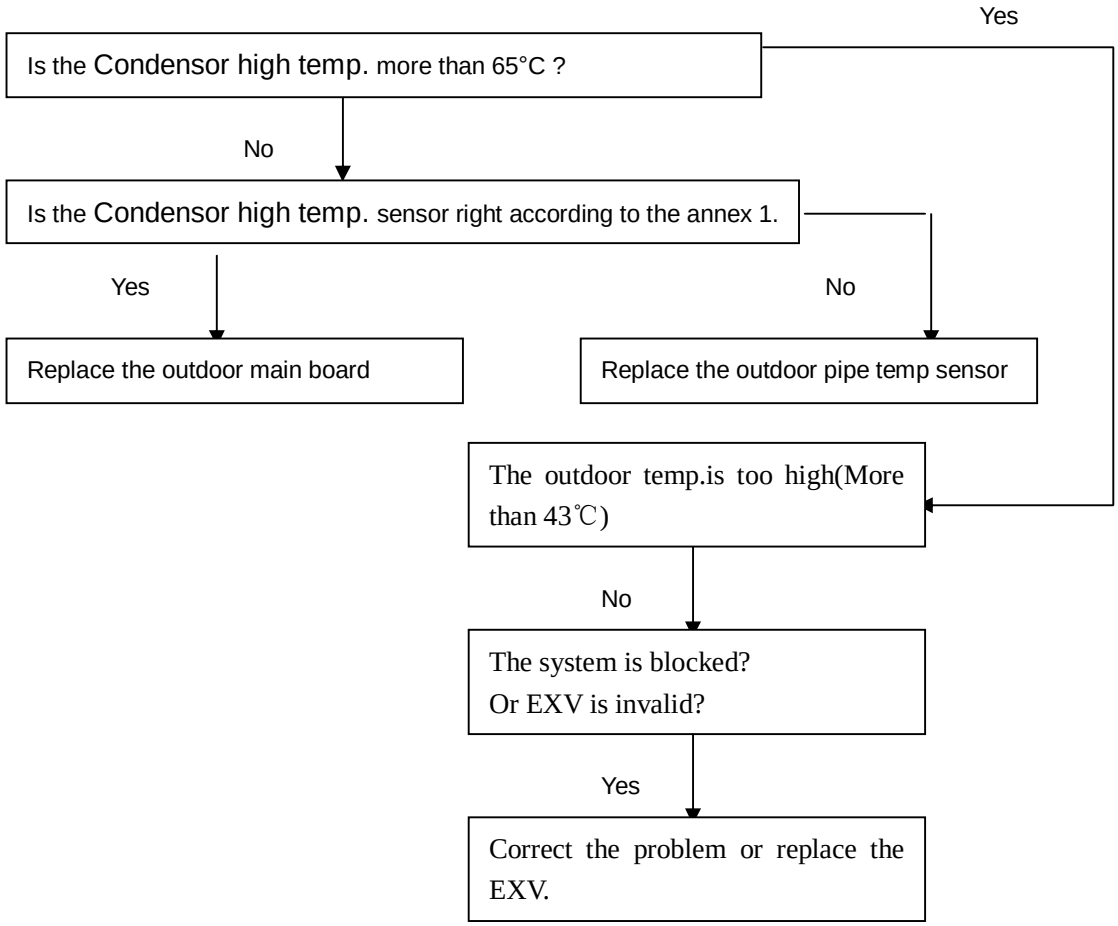
Display	**Malfunction or Protection**
P4	**Compressor discharge temperature protection**

When Compressor discharge temp. is more than 105°C, the unit will stop, and unit runs again when Compressor discharge temp. less than 90°C.


Is the Compressor discharge temp. more than 105°C ?
Yes
No
No
Is the wiring connection is right between Compressor discharge temp.sensor and PCB according to Wiring diagrams
Correct the wiring connection
Yes
No
Is the resistance of remp.sensor is right
Replace the Compressor discharge temp.
Yes
Replace the outdoor main board
No
Correct the voltage and frequency
Check whether the voltage and frequency is normal.
Yes
Check whether the refrigerant is leakage.
Yes
Stop leaking and replenish refrigerant

Display	**Malfunction or Protection**
P5	**Condensor high temperature protection**

When Condensor high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.


Yes
Is the Condensor high temp. more than 65°C ?
No
Is the Condensor high temp. sensor right according to the annex 1.
Yes
No
Replace the outdoor main board
Replace the outdoor pipe temp sensor
The outdoor temp.is too high(More than 43℃)
No
The system is blocked?
Or EXV is invalid?
Yes
Correct the problem or replace the EXV.

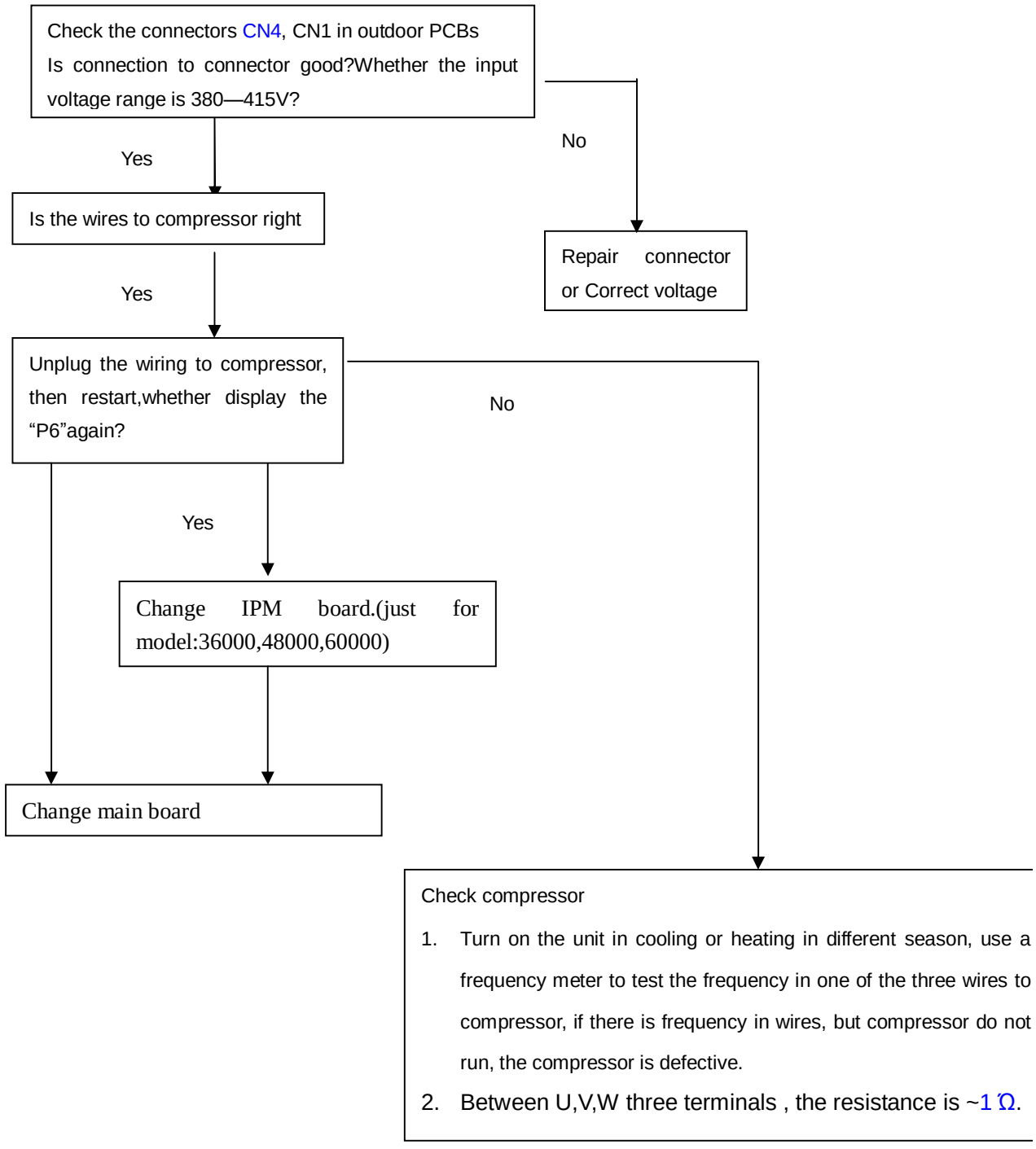
Remark：①Test digital discharge temperature, outdoor condenser temperature T3

② Test system pressure

③ High digital discharge temperature is likely owing to the lack of refrigerant, air leakage or system blockade. Check the above items respectively to solve the problem.

③ Condensor high temperature protection owes to the overcharge of refrigerant, air leakage or bad ventilation and heat-emission conditions.

Display(LED flashes for thirteen times)	**Malfunction or Protection**
P6	**Module protection**


Check the connectors CN4, CN1 in outdoor PCBs
Is connection to connector good?Whether the input voltage range is 380—415V?
No
Yes
Is the wires to compressor right
Repair connector or Correct voltage
Yes
Unplug the wiring to compressor, then restart,whether display the "P6"again?
No
Yes
Change IPM board.(just for model:36000,48000,60000)
Change main board
Check compressor
1. Turn on the unit in cooling or heating in different season, use a frequency meter to test the frequency in one of the three wires to compressor, if there is frequency in wires, but compressor do not run, the compressor is defective.
2. Between U,V,W three terminals , the resistance is ~1 Ω.